

Exercise 3.1

Q1 If $P(A) = 0.3$, $P(B) = 0.5$ and $P(A \text{ and } B) = 0.15$, find:

- a) $P(A')$ b) $P(A \text{ or } B)$ c) $P(A' \text{ and } B')$

Q2 If $P(A') = 0.36$, $P(B) = 0.44$ and $P(A \text{ and } B) = 0.27$, find:

- a) $P(B')$ b) $P(A \text{ or } B)$ c) $P(A \text{ and } B')$ d) $P(A \text{ or } B')$

Q3 A car is selected at random from a car park. The probability of the car being blue is 0.25 and the probability of it being an estate is 0.15. The probability of the car being a blue estate is 0.08.

- a) What is the probability of the car not being blue?
b) What is the probability of the car being blue or being an estate?
c) What is the probability of the car being neither blue nor an estate?

Q4 If $P(X \text{ or } Y) = 0.77$, $P(X) = 0.43$ and $P(Y) = 0.56$, find:

- a) $P(Y')$ b) $P(X \text{ and } Y)$
c) $P(X' \text{ and } Y')$ d) $P(X' \text{ or } Y')$

Q5 If $P(C' \text{ or } D) = 0.65$, $P(C) = 0.53$ and $P(D) = 0.44$, find:

- a) $P(C' \text{ and } D)$ b) $P(C' \text{ and } D')$
c) $P(C' \text{ or } D')$ d) $P(C \text{ and } D)$

Q6 The probability that a student has read 'To Kill a Mockingbird' is 0.62. The probability that a student hasn't read 'Animal Farm' is 0.66. The probability that a student has read at least one of these two books is 0.79. Find:

- a) The probability that a student has read both the books.
b) The probability that a student has read 'Animal Farm' but hasn't read 'To Kill a Mockingbird'.
c) The probability that a student has read neither of the books.

Hint: Remember, you can always draw a Venn diagram to help you.

Q2d) Hint: You have all the information you need to use the addition law, replacing B with B'.